REMARKS

This Amendment in RCE is being filed concurrently with a Request for Continued Examination. Claim 1 has been amended.

Claim 1 stands rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Applicant's Admitted Prior Art ("*APA*"). This rejection is respectfully traversed.

Applicants respectfully submit that the Office Action has not established that the *APA* anticipates each and every feature of Applicants' claimed invention and that all rejections under 35 U.S.C. § 102(b) should be withdrawn. Namely, Applicants contend that independent claim 1 recites "the main body of the image forming apparatus comprises a plurality of openable covers on a front side wall thereof, and at least a part of said transport path is exposed by opening at least one of the plurality of openable covers." The *APA* only discloses features of "conventional apparatuses include a paper transport path on a lateral side of the apparatus, and therefore the paper path provided along the side surface of the apparatus must be opened to remove a sheet stuck in the path upon a paper jam," as stated in the specification at page 4, lines 15-18.

The Office Action also asserts that the tray of the *APA* is movable in two directions, in and out. However, the Office Action does not consider that the tray in the present invention moves in, out, left, and right. Newly amended claim 1 now recites a "sheet storing portion comprising at least one sheet tray that stores a stack of recording sheets and is horizontally movable in any of two directions relative to a main body of the image forming apparatus, the two directions being substantially orthogonal to each other." Emphasis added. As such, Applicants respectfully assert that the rejection under 35 U.S.C. § 102(b) should be withdrawn because the *APA* does not teach or suggest each feature of independent claim 1.

Claims 1-5, 11 and 18 were rejected under 35 U.S.C. § 102(b) as allegedly anticipated by *Ohashi*. This rejection is respectfully traversed.

Applicants respectfully submit that the Office Action has not established that *Ohashi* anticipates each and every feature of Applicants' claimed invention and that all rejections under 35 U.S.C. § 102(b) should be withdrawn. Namely, Applicants contend that independent claim 1 recites "the main body of the image forming apparatus comprises a plurality of openable covers on a front side wall thereof, and at least a part of said transport path is exposed by opening at least one of the plurality of openable covers." At least these features are not disclosed or taught by *Ohashi*.

The Office Action asserts that *Ohashi* discloses features of the cover similar to that shown by part 111 in Figs. 25 and 26, Applicants respectfully disagree. Part 111 is actually a manual paper feed portion for inserting paper into the imaging apparatus and not a cover. A machine translation of JP 06-247569 A from the Japanese Patent Office (JPO) indicates that part 111 as shown in Fig. 25 is the [pressure plate and 111] of the manual bypass sections. See ¶ 0002 of the attached JPO machine translation. Further, part 111 is also not located "on a front side wall thereof" of the main body of the image forming apparatus as recited in claim 1. Because *Ohashi* does not disclose the cover on a front side wall, it cannot anticipate the invention recited in claim 1.

The Advisory Action points to the unnumbered rectangle on the front surface of Fig. 1 as being the recited openable cover. The JPO machine translation of the specification does not discuss or even mention this feature. The comments in the Advisory Action make the unsubstantiated assertion that the unnumbered rectangle on the front surface of Fig. 1 is a cover

as recited in the claims. Applicants respectfully submit that these unsubstantiated assertions cannot be considered to be anticipatory of the present invention.

The Abstract of *Ohashi* also discloses an imaging apparatus that provides "paper sheets from the direction of copying by a user doing a copy work from the back, that is paper discharge side by drawing out an outer frame so as to simultaneously draw out an outer frame tray and an inner frame tray, or drawing out only an inner frame tray against the device main body." The Office Action suggests that a singular sheet tray 1050 moves in two directions orthogonal to each other. Contrary to this assertion, *Ohashi* discloses two separate trays: an outer tray 1061 and inner tray 1062 that move orthogonally to each other. See Fig. 3 of *Ohashi*. Because *Ohashi* does not disclose the singular tray feature, it cannot anticipate the invention recited in claims 1 and 11.

Applicants respectfully submit that the Office Action has not established that *Ohashi* anticipates each and every feature of Applicants' claimed invention and that all rejections under 35 U.S.C. § 102(b) should be withdrawn. Namely, Applicants contend that independent claim 11 recites "the direction in which the sheet tray is pulled out coincides with the direction in which said recording sheets are fed, and the sheet tray is movable in any of two directions substantially orthogonal to each other." At least these features are not disclosed or taught by *Ohashi*.

As pointed out in MPEP § 2131, a claim is anticipated by a prior art reference only if each and every element as set forth in the claim is found. *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051 (Fed. Cir. 1987). Therefore, Applicants respectfully assert that the rejection under 35 U.S.C. § 102(b) should be withdrawn because *Ohashi* does not teach or suggest each feature of independent claims 1 and 11.

Additionally, Applicants respectfully submit that dependent claims 2-5 are also allowable insofar as they recite the patentable combinations of features recited in claim 1, as well as reciting additional features that further distinguish over the applied prior art.

Claims 6 and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Ohashi* in view of *Ishihara*. This rejection is respectfully traversed.

The Office bears the initial burden of establishing a *prima facie* case of obviousness. M.P.E.P. § 2142. If the Office fails to set forth a *prima facie* case of obviousness, Applicant is under "no obligation to submit evidence of nonobviousness," such as unexpected results or commercial success. *Id.* In other words, if the Office fails to meet the initial burden of establishing a *prima facie* case of obviousness as to a given claim, then that claim is not obvious without any evidence of nonobviousness by the Applicant.

In order to establish a *prima facie* case of obviousness, the Office must satisfy three requirements. M.P.E.P. § 2142. First, "the prior art reference, or references when combined, must teach or suggest *all* the claim limitations." *Id.* (emphasis added). Second, the Office must show that there is "some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings." *Id.* Finally, "there must be a reasonable expectation of success." *Id.*

In the present case, neither *Ohashi* nor *Ishihara*, either alone or in combination teaches or suggests at least the feature of "the main body of the image forming apparatus comprises a plurality of openable covers on a front side wall thereof, and at least a part of said transport path is exposed by opening at least one of the plurality of openable covers," as recited in claim 1, and the feature of "[a]n image forming apparatus . . . wherein . . . the sheet tray is movable in any of

two directions substantially orthogonal to each other," as recited in claim 11, from which claims 6 and 12 depend, respectively.

With respect to claim 6, *Ishihara* does not make up for the deficiencies of *Ohashi*. That is, *Ishihara* does not teach or suggest an image forming apparatus with a plurality of openable covers on a front side wall as recited in claim 1. Thus, the Office Action has not established a *prima facie* case of obviousness at least because neither *Ohashi* nor *Ishihara*, whether alone or in combination, teach or suggest all the recited features of independent claim 1 from which claim 6 depends.

Further, *Ishihara* also does not make up for the deficiencies of *Ohashi* because *Ishihara* does not teach or suggest an image forming apparatus with a "sheet storing portion comprising at least one sheet tray that stores a stack of recording sheets and is horizontally movable in any of two directions relative to a main body of the image forming apparatus, the two directions being substantially orthogonal to each other," as newly recited in claim 1. Thus, the Office Action has not established a *prima facie* case of obviousness at least because neither *Ohashi* nor *Ishihara*, whether alone or in combination, teach or suggest all the recited features of independent claim 1 from which claim 6 depends.

With respect to claim 12, *Ishihara* does not make up for the deficiencies of *Ohashi*. That is, *Ishihara* does not teach or suggest "[a]n image forming apparatus . . . wherein . . . the sheet tray is movable in any of two directions substantially orthogonal to each other," as recited in independent claim 11. Thus, the Office Action has not established a *prima facie* case of obviousness at least because neither *Ohashi* nor *Ishihara*, whether alone or in combination, teach or suggest all the recited features of independent claim 11, from which claim 12 depends.

As pointed out in M.P.E.P. § 2143.03, "[t]o establish prima facie obviousness of a

claimed invention, all the claimed limitations must be taught or suggested by the prior art". *In re Royka*, 409 F.2d 981, 180 USPQ 580 (CCPA 1974). As such, Applicants respectfully assert that the third prong of *prima facie* obviousness has not been met. Because the Office Action fails to meet at least one of the three requirements for establishing a *prima facie* case of obviousness, Applicants respectfully request that the rejection of claims 6 and 12 under 35 U.S.C. § 103(a) be withdrawn.

Claim 10 stands rejected under 35 U.S.C. § 103(a) as allegedly being -unpatentable over *Ohashi* in view of *Ishio*. This rejection is respectfully traversed.

Applicants respectfully submit neither *Ohashi* nor *Ishio*, either alone or in combination teaches or suggests at least the features of "the main body of the image forming apparatus comprises a plurality of openable covers on a front side wall thereof, and at least a part of said transport path is exposed by opening at least one of the plurality of openable covers," as recited in claim 1, from which claim 10 depends. Thus, the Office Action fails to establish a *prima facie* case of obviousness as to claim 10.

Ishio does not make up for deficiencies previously demonstrated in *Ohashi*. Accordingly, it is respectfully submitted that the rejection is in error. Withdrawal of the rejection under 35 U.S.C. § 103(a) over *Ohashi* in view of *Ishio* is respectfully requested. Claim 10 is also allowable at least because it recites the same combination of features as independent claim 1, as well as the additional features it recites that further distinguish them over the applied art.

Further, *Ishio* also does not make up for the deficiencies of *Ohashi* because *Ishio* does not teach or suggest an image forming apparatus with a "sheet storing portion comprising at least one sheet tray that stores a stack of recording sheets and is horizontally movable in any of two

directions relative to a main body of the image forming apparatus, the two directions being substantially orthogonal to each other," as newly recited in claim 1. Thus, the Office Action has not established a *prima facie* case of obviousness at least because neither *Ohashi* nor *Ishio*, whether alone or in combination, teach or suggest all the recited features of independent claim 1 from which claim 10 depends.

For the same reasons above-mentioned, it is respectfully submitted that none of the references of record teach or suggest the features of Applicants pending claims. In view of the above arguments, Applicants respectfully request that the rejection of claim 10 under 35 U.S.C. §103(a) be withdrawn.

CONCLUSION

In view of the foregoing, Applicants respectfully request reconsideration and allowance of all pending claims.

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

EXCEPT for issue fees payable under 37 C.F.R. § 2.28, the Commission is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to to our Deposit Account No. 50-0310. This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully submitted,

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TECHNICAL FIELD

[Industrial Application] This invention relates to the equipment receipt mold form tray equipment of printers, such as a copying machine, facsimile, and a printer, and relates a form tray, for example, a sheet paper cassette, a paper output tray, a double-sided tray, etc. to receipt mold form tray equipment withdrawal in the many directions especially.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the equipment receipt mold form tray equipment of printers, such as a copying machine, facsimile, and a printer, and relates a form tray, for example, a sheet paper cassette, a paper output tray, a double-sided tray, etc. to receipt mold form tray equipment withdrawal in the many directions especially.
[0002]
[Description of the Prior Art] In printers, such as a copying machine and facsimile, there is a copying machine as shown in drawing 25 . this drawing -- setting -- 8050 -- for a paper output tray and 8100, as for a control unit and 110, a copying machine and 101 are [a medium tray and 51 / a double-sided tray and 52 / a pressure plate and 111] the manual bypass sections.
[0003] The copying machine 8100 shown in drawing 25 is in the condition that medium trays 8050 and 8050 were formed in the side face of a copying machine 8100, and jumped out, and the installation area of a copying machine 8100 was large.
[0004] In order to make small installation area of such a copying machine 8100, the thing of the gestalt which can contain the medium tray 9050 as shown in drawing 26 and drawing 27 , and a paper output tray 52 in the body of equipment is known. Generally such a form tray gestalt is called frontloading.
[0005] Drawing 26 and drawing 27 have shown the copying machine with which the medium tray serves as frontloading, and explain this copying machine. In addition, the same sign is given to the same part as drawing 25 .
[0006] The copying machine 9100 serves as the manuscript read station (scanner) 102, the imaging section 103, and the form stock section 105 that consists of two or more medium trays 9050 from the top, as shown in drawing 26 and drawing 27 . If a manuscript is set and a copy carbon button is pushed, a form will be led to the imaging section 103 through the conveyance section 104 in the right-hand side of equipment from a medium tray 9050. The copy image of a manuscript is imprinted here, a toner image is fixed on a form in the fixing section 106, and it is discharged by the paper output tray 52 outside the equipment left. In addition, it is the requisite to place a copying machine 9100 in the wall case, and to use it. Therefore, if a copying machine 9100 is installed, a transverse plane will be decided, and a medium tray 9050 is made to lengthen and come out to the one direction by the side of this transverse plane.
[0007]
[Problem(s) to be Solved by the Invention] By the way, the requests of wanting you to raise the degree of freedom of installation of a copying machine in recent years are mounting. For example, they are if you want to put a copying machine on the middle of the room and to use it from both sides (a transverse plane and tooth back), the request of wanting to use it from a delivery side in a deskside. It thinks it easier to push the copy start key which extends a hand and is in a transverse plane, and a copy is performed from a tooth-back side, or there is actually a user who performs a copy from a delivery side rather than it turns and copies to a transverse plane.

[0008] Generally the form of amounts, such as 250 sheets and 500 sheets, is stocked at once by the form tray. Form supply will be performed comparatively frequently.
[0009] While using the copying machine from the tooth-back and feeding side, supposing a form is exhausted, although a user wants to perform actuation from a transverse plane and there is, he has to supply a form to the medium tray whose form was exhausted the surroundings at the front in order to supply a form. [no]
[0010] The purpose of this invention has a tooth back and the user who has taken the copy from the delivery side in offering the receipt mold form tray equipment it enables it to perform from the direction which takes a copy for form supply by enabling it to pull out a frontloading type medium tray not only to a transverse plane but to a tooth-back or delivery side.
[0011]
[Means for Solving the Problem] In the receipt mold form tray equipment with which the above-mentioned purpose is contained in a printer body Have an outer frame tray and a seating-rim tray, and an open field is established in at least one side of said outer frame tray. Said seating-rim tray is arranged withdrawal from the open field of said outer frame tray. It is attained by the 1st means which can pull out said outer frame tray and a seating-rim tray to coincidence by pulling out said outer frame tray to said body of equipment, or enabled it to pull out only said seating-rim tray to said body of equipment.
[0012] In said 1st means, the above-mentioned purpose is attained by the 2nd means which established the lock device locked so that said tray cannot be pulled out in other directions, while pulling out said tray in a certain direction.
[0013] In the receipt mold form tray equipment with which the above-mentioned purpose is contained in a printer body Along with a guide, can pull out a form tray from said body of equipment, and said form tray is contained withdrawal to a cross direction. It is attained by the 3rd means which established the lock device which contains said form tray on said body of equipment, arranged the lock release lever when pulling out said form tray to a before side in the before side, and arranged the lock release lever when pulling out said form tray to the backside in the backside.
[0014] In said 1st or 3rd means, the above-mentioned purpose is attained by the 4th means which prepared covering closed so that opening may not arise in the drawer section of other directions, while pulling out said tray in a certain direction.
[0015]
[Function] In said 1st means, form tray equipments of the printer receipt mold which can be pulled out in the many directions, such as a transverse plane, a delivery side and a transverse plane, and a tooth back, can be offered. Consequently, the printer which can be operated from many is possible.
[0016] In said 2nd means, while pulling out the form tray in a certain direction in printer receipt type form tray equipment withdrawal in the many directions, the form tray contained to equipment may be able to be pulled out in another direction. Since the lock device which cannot be pulled out on the form tray which can be pulled out in another direction at this time was established, breakage of the form tray which it becomes impossible to pull out a form tray in another direction, and has already been pulled out in it can be prevented.
[0017] In said 3rd means, the form tray of the printer receipt mold which can be pulled out to the 2-way of a transverse plane and a tooth back can be offered. Moreover, this device is still easier than said 1st means, and it is equipment of low cost more. Consequently, the printer which can be operated from an order 2-way is possible. Moreover, the form tray of a withdrawal printer receipt mold can be offered in the three directions with the combination of said the 1st and 3rd means.
[0018] In said 4th means, while pulling out the form tray in a certain direction in the printer receipt type form tray withdrawal in the many directions, some which opening produces are in a printer body. Since the shutter device was established in such a thing so that opening might not arise, breakage of the tray which occurs by shutting a form tray where a thing is accidentally inserted into this opening, and the injury produced by shutting a form tray to opening where a hand is pinched can be prevented.
[0019]
[Example] Hereafter, the example of this invention is explained based on a drawing. The perspective

view in which drawing 1 thru/or drawing 4 showing the 1st example of the receipt mold form tray equipment concerning this invention, and showing the copying machine overview for which drawing 1 used the 1st example, the perspective view in which drawing 2 shows the 1st example, the perspective view in which drawing 3 shows the 1st example, and drawing 4 are the perspective views showing the 1st example. In addition, the same sign is given to the same part as the conventional example.

[0020] The medium tray 1050 has double structure, as shown in drawing 2 . As shown in drawing 3 and drawing 4 , sliders (for outside trays) 72 and 72 are formed in the left and right laterals of the outside tray 1061, respectively, these sliders (for outside trays) 72 and 72 are countered, the slide rails 75 and 75 are attached in the body of equipment, respectively, and a medium tray 1050 can be detached now in the direction of a transverse plane (the direction of arrow-head A of drawing 3) and attached from equipment 2100 body along with this (pulling out and set).

[0021] The notching section 77 is formed in the bottom to which the slider 72 has clung by one side of the outside medium tray 1061. In this example, the notching section 77 is in a feeding side. The 2nd slide rail 76 and 76 which guides the inside medium tray 1062 is formed in the inside section of the notching section 77 of the outside medium tray 1061, and sliders 73 and 73 are formed in the side face of the inside medium tray 1062, respectively. And the inside medium tray 1062 can be detached now from the notching section 77 and attached in the direction of B of drawing 4 along with the 2nd slide rail 76 and 76 (pulling out and set).

[0022] the sheathing covering 91 of copying machine 1100 body -- the outside medium tray 1061 and the inside medium tray 1062 -- opening 48 is formed, respectively so that it can pull out directly. If the outside medium tray 1061 is pulled out from copying machine 1100 body, the inside medium tray 1062 will also be contained by the outside medium tray 1061, and will be pulled out by coincidence in the condition. If the inside medium tray 1062 is pulled out from copying machine 1100 body, the outside medium tray 1061 will remain in the body 1100 of a copying machine. In addition, the tip of the inside medium tray 1062 is located inside the frame of a copying machine 1100 so that it may appear in the outside medium tray 1061 and the inside medium tray 1062 can move.

[0023] By making it such a configuration, like drawing 1 , it pulls out to a transverse-plane side and a delivery side 2-way, and the receipt mold form tray equipment which can perform form supply can be offered.

[0024] Of course, what uses the opening side face of the notching section 77 of the outside medium tray 1061 as a conveyance road side and a tooth back, and is being considered as a configuration which pulls out the inside medium tray 1062 in the direction belongs to this invention.

[0025] Next, in case it puts on the middle of the room and a copying machine is used from the 2-way of a transverse plane and a tooth back, the 2nd example which enabled form supply is given and explained to drawing 5 - drawing 10 from both sides. The explanatory view showing the copying machine overview using the 2nd example of the receipt mold form tray equipment which drawing 5 requires for this invention, The explanatory view in which drawing 6 shows the medium tray of the 2nd example, and drawing 7 The handle of the lock condition of the medium tray of the 2nd example, The explanatory view and drawing 8 which show the detail of the lock section The handle of the lock condition of the medium tray of the 2nd example, The lock section is expanded and they are the shown explanatory view, the explanatory view in which drawing 9 shows the handle at the time of lock discharge of the medium tray of the 2nd example, and the detail of the lock section, and the explanatory view which the handle at the time of lock discharge of the medium tray of the 2nd example and the lock section expand drawing 10 , and is shown. In addition, in this 2nd example, a transverse plane is called a before side.

[0026] In this 2nd example, as shown in drawing 5 and drawing 6 , medium trays 2063 and 2063 are contained withdrawal from the body 2100 of a copying machine along with the slide rail 74. Lock pawl 82a or 82b is prepared in both ends at the slider 72. If lock pawl 82b in the backside is canceled, a medium tray 2063 can be pulled out to a before side, and if lock pawl 82a by the side of before is canceled, it can pull out to the backside.

[0027] As shown in drawing 6 - drawing 8 , it pulls out before and after a medium tray 2063, and the handles 88 and 88 of business are formed, and in a handle 88 and 88, the levers 80a and 80b of a V

character configuration are supported to revolve with the flection, and are prepared. Lever 80b by the side of before [this] and lock pawl 82b on the backside are connected by wire 81b, and lever 80a on the backside and lock pawl 82a by the side of before are connected by wire 81a.
[0028] Actuation of this 2nd example is explained. A form is exhausted, and if a user is going to pull out a medium tray 2063 and lengthens a handle 88, lever 80b (or 80a) which is inside a handle 88 will be lengthened. As the wire 81 of lever 80b (or 80a) is lengthened, lock pawl 82b (or 82a) enters along the inside of the guide 83 of a slider configuration and it is shown in drawing 9 and drawing 10 , lock pawl 82b (or 82a) separates from the edge of a slider 72, and a lock device is canceled. A medium tray 2063 can be pulled out in this condition.
[0029] a form -- supplying -- a medium tray 2063 -- perfect -- the inside of a copying machine 2100 -- pushing in (it being in the condition of drawing 5) -- lock pawl 82b (or 82a) is extruded besides the guide 83 of a slider configuration by the force of a spring 87. That is, in this condition, since the handle 88 is not lengthened, as lock pawl 82b (or 82a) is extruded besides the guide 83 of a slider configuration by the force of a spring 87 and it is shown in a projection and drawing 7 , a medium tray 2063 is locked.
[0030] As a medium tray withdrawal forward and backward, since the device of this 2nd example is easy structure, it is made at a low price. Consequently, the printer which can be operated from an order 2-way is possible.
[0031] Next, the device of said 1st example shown in drawing 1 - drawing 4 and the device of said 2nd example shown in drawing 5 - drawing 10 are combined, and the 3rd example of the medium tray equipment whose disconnection was enabled at the transverse-plane, delivery, and tooth-back side is explained. The explanatory view and drawing 12 which show the copying machine overview using the 3 direction disconnection form tray of the 3rd example of the receipt mold form tray equipment which drawing 11 requires for this invention are the perspective view of the 3 direction disconnection form tray of the 3rd example. In addition, the same sign is given to the same part as said example.
[0032] The medium tray 64 which can be contained in a copying machine 3100 has double structure. The outside medium tray 65 is withdrawal in order both directions, and the lock release lever 80 when pulling out the lock release lever 80 when pulling out the outside medium tray 65 to a before side behind to a before side is in the backside. There is the notching section 77 in the delivery side of the outside medium tray 65, and the inside medium tray 66 can pull out now from here independently to a delivery side. In addition, 81 is a wire and 82 is a lock pawl. The receipt mold form tray equipment which can supply a form from three directions can consist of this 3rd example.
[0033] Next, the 4th example of this invention is explained. The perspective view of the 3 direction disconnection form tray of the 4th example of the receipt mold form tray equipment which drawing 13 requires for this invention, The explanatory view in which drawing 14 (a) shows the detail at the time of lock disconnection of the lock section (only one side) of the 4th example, They are the explanatory view which drawing 14 (b) is expanded at the time of lock disconnection of the lock section, and is shown, the explanatory view in which drawing 15 (a) shows the detail at the time of the lock of the lock section (only one side) of the 4th example, and the explanatory view which drawing 15 (b) is expanded at the time of the lock of the lock section, and is shown. In addition, the same sign is given to the same part as said example.
[0034] In this 4th example, as shown in drawing 13 thru/or drawing 15 R> 5, the lock device 30 of the outside medium tray 4061 in which attachment and detachment of the inside medium tray 4062 are interlocked with, and it operates is established.
[0035] When the inside medium tray 4062 is contained by the outside medium tray 4061, the spring made the lock pawl of the lock member 32 the crevice 31 of the inside medium tray 66, and it is settled in it by the force. The lock pawl of the lock member 32 does not go into the notching hole 34 of a slider, but the outside medium tray 4061 becomes withdrawal along with the slide rail 75.
[0036] Where the outside medium tray 4061 is contained on the body of a copying machine, suppose that the inside medium tray 4062 was pulled out. The head (lock pawl) of the lock member 32 in an order 2-way is pushed at the pars basilaris ossis occipitalis of the inside medium tray 4062, the lock pawl of the lock member 32 enters the notching hole 34 of a slider, and the outside medium tray 4061 is

locked to the slide rail 75. If the inside medium tray 4062 is again contained on the body of a copying machine, the lock pawl of the lock member 32 will return to the crevice 31 of the inside medium tray 4062. In this way, the outside medium tray 4061 will be in an open condition to a slider 72.
[0037] By making it the device of such said 4th example, one is not going to notice the inside medium tray 4062 pulled out, but it is going to pull out the outside medium tray 4061, and a possibility of damaging medium trays 4061 and 4062 is lost. That is, when the inside medium tray 4062 is pulled out out of the copying machine, it is going to pull out the outside medium tray 4061, the inside medium tray 4062 collides with the body of a copying machine, AKYUREITO and the slider which exist inside the outside medium tray 4061 bend, and there is nothing it becomes impossible for the inside medium tray 4062 to contain in the outside medium tray 4061.
[0038] Next, the 5th example of this invention is explained with reference to drawing 16 R> 6 - drawing 18 . Drawing of longitudinal section in which drawing of longitudinal section in which drawing 16 (a) and (b) show the condition at the time of shutter disconnection of the 5th example and a front view, drawing 17 (a), and (b) show the condition at the time of shutter actuation of the 5th example and a front view, and drawing 18 are the explanatory views showing the sliding part of the shutter of the 5th example, and a medium tray.
[0039] In said 1st example, when the outside medium tray 1061 is pulled out, the drawer section of the medium tray 1062 inside the body 1100 of a copying machine serves as opening 48. When an object shuts medium trays 1061 and 1062 to this opening 48 in the state of ******, there is a possibility that medium trays 1061 and 1062 or a copying machine 1100 may be damaged. Or while people are editing this opening 48 accidentally, when medium trays 1061 and 1062 are shut, there is also a possibility that it may be injured at a hand.
[0040] In order to prevent such fault, when medium trays 1061 and 1062 are pulled out in a certain direction in what can be pulled out in the many directions by the body receipt mold medium tray of a copying machine, in the example of **** 5, a shutter 40 is formed so that opening 48 may not arise in other directions of a drawer.
[0041] The 5th example in the medium tray equipment of the double structure which can be pulled out to the transverse plane and delivery side 2-way like said drawing 1 - drawing 4 is shown in drawing 16 - drawing 18 . In this 5th example, the shutter 40 is formed by the body 1100 of a copying machine on the opening 48 which pulls out the inside medium tray 1062. This shutter 40 serves as a configuration which has heights 42 in the tooth-back side of a copying machine 1100. Heights 42 are in the transverse-plane side of the notching section 77 of the outside medium tray 1061, and the tooth-back side serves as the cut section 43. The side by the side of the transverse plane of a shutter 40 and the side by the side of the transverse plane of heights 42 serve as the taper section. Moreover, the taper section is formed also for the cut section 43 the tooth-back side of the heights 42 of the outside medium tray 1061. The include angle of these taper sections is equal.
[0042] the time of the outside medium tray 1061 being contained by the body 1100 of a copying machine -- the heights 41 of a shutter 40, and the base of the notching section 77 of the outside medium tray 1062 -- moreover, the inferior surface of tongue of a shutter 40 and the heights 42 of the outside medium tray 1061 touch, respectively. A shutter 40 is raised by heights 42 and the opening 48 which can pull out the inside medium tray 1062 is formed.
[0043] Next, actuation of the 5th example is explained. From the condition of drawing 16 , if the outside medium tray 1061 is pulled out, the taper section of a shutter 40 and medium trays 1061 and 1062 begins contact, and the shutter 40 falls gradually. The notching section 77 of the inferior surface of tongue of a shutter 40 and the outside medium tray 1061 contacts, and a shutter 40 closes the opening 48 of copying machine 1100 body for pulling out the inside medium tray 1062 (drawing 17).
[0044] In addition, while pulling out the outside medium tray 1061 after this, the inferior surface of tongue of a shutter 40 and the base of the notching section 77 of the outside medium tray 1061 are a sliding surface (drawing 18). Therefore, as for this part, it is desirable to form by an ingredient with small coefficient of friction, for example, polyacetal, fluororesin, etc.
[0045] Next, a motion of the shutter 40 when containing the outside medium tray 1061 is explained.

From the condition of drawing 17 , it is begun to stuff the medium tray 1061 of the outside currently pulled out into copying machine 1100 body. While the inferior surface of tongue of a shutter 40 and the base of the notching section 77 of the outside medium tray 1061 grind, the outside medium tray 1061 goes into the body 1100 of equipment. Just before receipt of the outside medium tray 1061 is completed, the taper section of a shutter 40 and the outside medium tray 1061 starts contact, and a shutter 40 begins to be raised. if the outside medium tray 1061 is contained in a copying machine 1100 -- the base of the heights 41 of a shutter 40, and the notching section 77 of the outside medium tray 1061 -- moreover, the outside heights 42 and the outside shutter 40 of a medium tray 1061 contact, and as shown in drawing 16 , a shutter 40 will be in an open condition.

[0046] Making it the device of such 5th example can close the opening 48 for pulling out the inside medium tray 1062 produced by pulling out the outside medium tray 1061.

[0047] Next, explanation of said 2nd example shown in drawing 5 - drawing 10 and the 6th example of the medium tray equipment of a 2-way open sand mold same type is given using drawing 19 and drawing 20 . The perspective view at the time of shutter disconnection of the 6th example of the receipt mold form tray equipment which drawing 19 requires for this invention, and drawing 20 are the perspective views at the time of shutter actuation of the 6th example.

[0048] In this 6th example, the character type shutter 20 of KO is arranged on opening of the both sides (order side) of a medium tray 6063. The taper sections 20a and 20a are formed in the both ends 27 and 27 of the character of KO of this shutter 20. It pulls out on the slide side (right-and-left side of drawing 19 R> 9) of a medium tray 6063, and the taper-like notching sections 25 and 25 are formed near the field (order side).

[0049] When the medium tray 6063 is contained by the body of equipment, as shown in drawing 19 , the edges 27 and 27 of the character of KO of a shutter 20 have ridden on the top-face part without the notching sections 25 and 25 of a medium tray 6063, and the shutter 20 is in the open condition.

[0050] Suppose that the medium tray 6063 was pulled out to the before side (the direction of an arrow head of drawing 19). The shutter 20 by the side of before touches the slide side of a medium tray 6063, and is not closed. Taper section 20a of the taper side of the notching sections 25 and 25 and the character of KO of a shutter 20 contacts, and a shutter 20 descends and closes the shutter 20 on the backside gradually along with a guide 23. after contact of taper section 20a of the character of the taper side of the notching sections 25 and 25 of a medium tray 6063 and KO of a shutter 20 is completed, it is shown in drawing 20 -- as -- a shutter 20 -- falling -- as -- the backside -- opening 48 is closed.

[0051] Next, a motion of the shutter 20 in case the medium tray 6063 is pulled out at the before side and contained in a copying machine 1100 is explained. Although not illustrated, the shutter 20 on the backside and the shutter by the side of before [same] have been wide supported and opened to the slide side of a medium tray 6063 (refer to drawing 20). Just before receipt of a medium tray 6063 ends the shutter 20 on the backside, taper section 20a of the both ends 27 of the character of KO of a shutter 20 and the taper side of the notching sections 25 and 25 of a medium tray 6063 start contact. With these tapers, the shutter 20 is raised gradually. When receipt of a medium tray 6063 is completed, the edge 27 of the character of KO of a shutter 20 touches the part without the notching section 25 of the slide side of a medium tray 6063, and as shown in drawing 19 , the opening 48 for the drawers on the backside [a medium tray 6063] opens it.

[0052] It is better to form with an ingredient with small coefficient of friction, since it is opened and closed, sliding on taper section 20a of the both ends 27 of the character of KO of a shutter 20 and an inferior surface of tongue, and the top face of the slide side of a medium tray 6063. In addition, the part shown by hatching by drawing 20 is a sliding surface, and this part slides with the shutter by the side of before in this example.

[0053] Next, the 7th example of this invention is explained with reference to drawing 21 R> 1 - drawing 23 . Drawing 21 is [the front view at the time of shutter closing of the 7th example and drawing 23 of the front view at the time of shutter actuation of the 7th example and drawing 22] the front views at the time of shutter actuation of the 7th example. Although said 6th example explained the shutter opened and closed along with a guide, the 7th example is explained as another example. The shutter 7040 in this

7th example was fished on equipment 7100 body by the link 120,120, and is gone down. There are heights 7042 in the transverse-plane side of the outside medium tray 7061. Taper section 7042a is formed in the tooth-back side (it sets to drawing and is left-hand side) of heights 7042, and the taper section and 7040a are formed in the transverse-plane side (it sets to drawing and is right-hand side) of a shutter 7040, respectively. The include angle of the taper of these taper sections 7040a and 7042a is set up equally.

[0054] Next, actuation of the 7th example is explained. When having contained the outside medium tray 7061 on equipment 7100 body, as shown in drawing 21 , a shutter 7040 is raised by the heights 7042 of the outside medium tray 7061, and the opening 48 for pulling out the inside medium tray 7062 is open.

[0055] And if it begins to pull out the outside medium tray 7061, a shutter 7040 will descend, sliding in the outside medium tray 7061 and the taper sections 7042a and 7040a of a shutter 7040, as shown in drawing 23 . Since the link 120,120 which has fished the shutter 7040 at this time is an parallel link, its vertical side of a shutter 7040 is always level.

[0056] if the outside medium tray 7061 is pulled out to some extent until as shown in drawing 22 , it will descend further and a shutter 7040 will close the opening 48 for pulling out the inside medium tray 7062.

[0057] In addition, when containing the outside medium tray 7061 on copying machine 7100 body, a shutter 7040 is gradually raised, as shown along with taper section 7042a of the outside medium tray 7061 at drawing 23 from the condition of drawing 22 , and will be in the condition of drawing 21 at the above-mentioned and reverse.

[0058] The direction which makes a shutter 7040 open and close using a link 120 like this 7th example can open and close still more smoothly than what opens and closes a shutter along with a guide.

[0059] Furthermore, the 8th example is explained. The explanatory view showing [2424] the condition at the time of shutter disconnection of the 8th example (a) and drawing 24 (b) are the explanatory views showing the condition at the time of shutter closing. The shutter 8040 is hung by the wire 122 in this 8th example. The edge of this wire 122 has pulley 121,121 -- taken about, and is being fixed to the migration child 124. This migration child 124 is contained free [migration into a guide 126]. The spring with which 123 intervened between guides 126 with the migration child 124, and 125 are the stoppers with which the migration child 124 took care to have not jumped out of a guide 126.

[0060] Next, actuation of the 8th example is explained. When having contained the outside medium tray 8061 on the body of a copying machine, as shown in drawing 24 (a), the contact section 27 of the outside medium tray 8061 resists a spring 123, and is pushing in the migration child 124. Where the wire 122 which had the end fixed by this migration child 124 is pulled, the shutter 8040 is raised, and in it, it is opening the opening 48 for pulling out the inside medium tray 8062.

[0061] If the outside medium tray 8061 is pulled out from the body of a copying machine, the migration child 124 will move to a transverse-plane side (it is the right at drawing 24) by the force of a spring 123, and will move and stop the migration child 124 till the place of a stopper 125. As shown in drawing 24 (b), a shutter 8040 falls completely, and the shutter 8040 which is in the reverse edge of a wire 122 with migration of this migration child 124 is closed ** about opening 48, when it descends and the migration child 124 moves till the place of a stopper 125.

[0062] In addition, if opening for pulling out a medium tray can be prevented from the ability doing no matter the breaker style of a shutter may be what thing, it cannot be overemphasized that it belongs to this invention.

[0063] Moreover, although said all explanation mentioned the medium tray equipment of a copying machine as the example, this invention is not restricted to this, and if it is the same configuration, it belongs to this invention also about form tray equipments, such as a paper output tray of a receipt mold of printers, such as a printer and facsimile, and a double-sided tray.

[0064]

[Effect of the Invention] According to invention according to claim 1, the printer which can offer form tray equipments of the printer receipt mold which can be pulled out in the many directions, such as a transverse plane, a delivery side and a transverse plane, and a tooth back, consequently can be operated

from many is possible.
[0065] According to invention according to claim 2, while pulling out the form tray in a certain direction in the receipt type form tray equipment of a printer withdrawal in the many directions, the form tray contained to equipment may be able to be pulled out in another direction. Since the lock device which cannot be pulled out on the form tray which can be pulled out in another direction at this time was established, breakage of the form tray which it becomes impossible to pull out a form tray in another direction, and has already been pulled out in it can be prevented.
[0066] According to invention according to claim 3, the printer which can offer the form tray equipment of the printer receipt mold which can be pulled out to the 2-way of a transverse plane and a tooth back, and can be more easy, and can offer the form tray equipment of low cost more, consequently can be operated from an order 2-way is possible.
[0067] Moreover, the device of claim 1 and claim 3 can be provided with the form tray equipment of a printer receipt mold withdrawal in three directions with combination.
[0068] Since the shutter device which closes opening produced on a printer body established according to invention according to claim 4 while pulling out the form tray in a certain direction in printer receipt type form tray equipment withdrawal in the many directions, breakage of the tray which occurs by shutting a form tray where a thing is accidentally inserted into this opening, and the injury which produce by shutting a form tray to opening where a hand is pinched can prevent.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the perspective view showing the copying machine overview using the 1st example of the receipt mold form tray equipment concerning this invention.
[Drawing 2] It is the perspective view showing the 1st example of the receipt mold form tray equipment concerning this invention.
[Drawing 3] It is the perspective view showing the 1st example of the receipt mold form tray equipment concerning this invention.
[Drawing 4] It is the perspective view showing the 1st example of the receipt mold form tray equipment concerning this invention.
[Drawing 5] It is the explanatory view showing the copying machine overview using the 2nd example of the receipt mold form tray equipment concerning this invention.
[Drawing 6] It is the explanatory view showing the medium tray of the 2nd example of the receipt mold form tray equipment concerning this invention.
[Drawing 7] It is the explanatory view showing the detail of the handle in the lock condition of the medium tray of the 2nd example of the receipt mold form tray equipment concerning this invention, and the lock section.
[Drawing 8] It is the explanatory view expanding and showing the handle in the lock condition of the medium tray of the 2nd example of the receipt mold form tray equipment concerning this invention, and the lock section.
[Drawing 9] It is the explanatory view showing the handle at the time of lock discharge of the medium tray of the 2nd example of the receipt mold form tray equipment concerning this invention, and the detail of the lock section.
[Drawing 10] It is the explanatory view expanding and showing the handle at the time of lock discharge of the medium tray of the 2nd example of the receipt mold form tray equipment concerning this invention, and the lock section.
[Drawing 11] It is the perspective view showing the copying machine overview using the 3 direction disconnection form tray of the 3rd example of the receipt mold form tray equipment concerning this invention.
[Drawing 12] It is the perspective view of the 3 direction disconnection form tray of the 3rd example of the receipt mold form tray equipment concerning this invention.
[Drawing 13] It is the perspective view of the 3 direction disconnection form tray of the 4th example of the receipt mold form tray equipment concerning this invention.
[Drawing 14] It is the explanatory view showing the condition at the time of the lock of the 4th example of the receipt mold form tray equipment concerning this invention.
[Drawing 15] It is the explanatory view showing the condition at the time of disconnection of the 4th example of the receipt mold form tray equipment concerning this invention.
[Drawing 16] It is the explanatory view showing the condition at the time of shutter disconnection of the 5th example of the receipt mold form tray equipment concerning this invention.

[Drawing 17] It is the explanatory view showing the condition at the time of shutter actuation of the 5th example of the receipt mold form tray equipment concerning this invention.
[Drawing 18] It is the explanatory view showing the sliding part of the shutter of the 5th example of receipt mold form tray equipment and medium tray concerning this invention.
[Drawing 19] It is a perspective view at the time of shutter disconnection of the 6th example of the receipt mold form tray equipment concerning this invention.
[Drawing 20] It is a perspective view at the time of shutter actuation of the 6th example of the receipt mold form tray equipment concerning this invention.
[Drawing 21] It is a front view at the time of shutter disconnection of the 7th example of the receipt mold form tray equipment concerning this invention.
[Drawing 22] It is a front view at the time of shutter closing of the 7th example of the receipt mold form tray equipment concerning this invention.
[Drawing 23] It is a front view at the time of shutter actuation of the 7th example of the receipt mold form tray equipment concerning this invention.
[Drawing 24] It is the explanatory view showing the condition at the time of closing at the time of shutter disconnection of the 8th example of the receipt mold form tray equipment concerning this invention.
[Drawing 25] It is the perspective view showing the copying machine using conventional receipt mold form tray equipment.
[Drawing 26] It is the perspective view showing the copying machine using conventional frontloading receipt mold form tray equipment.
[Drawing 27] It is drawing of longitudinal section of drawing 26 .
[Description of Notations]
20, 40, 7040 Shutter
30 Lock Device
48 Opening
64 The 3 Direction Disconnection Tray
65 The 3 Direction Disconnection Tray (Outside)
66 The 3 Direction Disconnection Tray (Inside)
71 Slider
72 Slider (for Outside Trays)
73 Slider (for Inside Trays)
74 Slide Rail
75 Slide Rail (for Outside Trays)
76 Slide Rail (for Inside Trays)
77 Notching Section
80, 80a, 80b Lever
81, 81a, 81b Wire
82, 82a, 82b Lock pawl
83 Guide
84a, 84b Spring (for levers)
85 Spring (for Lock Pawls)
86a, 86b Stopper (for levers)
87 Stopper (for Lock Pawls)
88 Handle
1100, 2100, 3100 Copying machine
1061, 4061, 7061 Medium tray (outside)
1062, 4061, 7061 Medium tray (inside)
2063 6063 Medium tray (order open sand mold)

[Translation done.]